

CHEMICAL VAPOR DEPOSITION DEVICE

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Abstract

PURPOSE: To enable the substrate temperature to be rapidly controlled during the ALE process by a method wherein a vessel filled up with a heated up or cooled down liquid metal is connected to a hollow susceptor so as to fill in and empty the susceptor corresponding to the changeover of material gas.

CONSTITUTION: The title device is provided with a heating means 30 such as infrared ray lamps, etc., outside a reactive tube 1 and at least two divided blocks (i) and (ii) so as to heat up a substrate 2 and a vessel 20 at different temperatures. When a piston 22 is pushed down i.e., the inside of a susceptor 10 is emptied, the substrate 2 is heated up at high temperature to be opposed to a material gas (a) capable of forming a crystal layer in high quality at the high temperature while when the piston 22 is pushed up to let a liquid metal 21 at low temperature flow into the susceptor 10, the substrate 2 is quenched through the intermediary of a highly thermal conductive sidewall 11 to be opposed to another material gas capable of depositing another crystal layer in high quality at the low temperature. Accordingly, the substrate temperature can be rapidly controlled during the ALE process, thereby enabling a compound semiconductor crystal layer in high quality to be formed in a short time.